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firing member is incapable from moving from the starting position to the ending position unless the firing member is in operable engagement with the alignment member in the cartridge body.

Another exemplary embodiment comprises an end effector for a surgical instrument. In at least one form, the end effector comprises an elongate channel that is configured to removably support a cartridge therein. A firing member is operably supported relative to the elongate channel for movement between a starting and ending position. An implement drive shaft is in operable engagement with the firing member for moving the firing member between the starting and ending positions upon applications of actuation motions thereto from a drive arrangement. The implement drive shaft is moveable from an inoperable position wherein the implement drive shaft is out of operable engagement with the drive arrangement to an operable position wherein the implement drive shaft is in operable engagement with the drive arrangement. The end effector further comprises an alignment member that is movably supported for contact with the implement drive shaft to move the implement drive shaft from the inoperable position to the operable position upon installation of a cartridge in the elongate channel.

Another exemplary embodiment includes a surgical instrument that comprises an elongate channel and a cartridge that is removably supported in the elongate channel. A firing member is operably supported relative to the elongate channel for movement between a starting and ending position. An implement drive shaft is in operable engagement with the firing member for moving the firing member between the starting and ending positions upon applications of actuation motions thereto from a drive arrangement. The implement drive shaft is moveable from an inoperable position wherein the implement drive shaft is out of operable engagement with the drive arrangement to an operable position wherein the implement drive shaft is in operable engagement with the drive arrangement. The surgical instrument further comprises an alignment member movably supported for contact with the implement drive shaft to move the implement drive shaft from the inoperable position to the operable position upon installation of a cartridge in the elongate channel.

The devices disclosed herein can be designed to be disposed of after a single use, or they can be designed to be used multiple times. In either case, however, the device can be reconditioned for reuse after at least one use. Reconditioning can include any combination of the steps of disassembly of the device, followed by cleaning or replacement of particular pieces, and subsequent reassembly. In particular, the device can be disassembled, and any number of the particular pieces or parts of the device can be selectively replaced or removed in any combination. Upon cleaning and/or replacement of particular parts, the device can be reassembled for subsequent use either at a reconditioning facility, or by a surgical team immediately prior to a surgical procedure. Those skilled in the art will appreciate that reconditioning of a device can utilize a variety of techniques for disassembly, cleaning/replacement, and reassembly. Use of such techniques, and the resulting reconditioned device, are all within the scope of the present application.

Although the present invention has been described herein in connection with certain disclosed exemplary embodiments, many modifications and variations to those exemplary embodiments may be implemented. For example, different types of end effectors may be employed. Also, where materials are disclosed for certain components, other materials may be used. The foregoing description and following claims are intended to cover all such modification and variations.

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Any patent, publication, or other disclosure material, in whole or in part, that is said to be incorporated by reference herein is incorporated herein only to the extent that the incorporated materials does not conflict with existing definitions, statements, or other disclosure material set forth in this disclosure. As such, and to the extent necessary, the disclosure as explicitly set forth herein supersedes any conflicting material incorporated herein by reference. Any material, or portion thereof, that is said to be incorporated by reference herein, but which conflicts with existing definitions, statements, or other disclosure material set forth herein will only be incorporated to the extent that no conflict arises between that incorporated material and the existing disclosure material.

What is claimed is:

1. A surgical tool for use with a robotic system that includes a tool drive assembly that is operatively coupled to a control unit of the robotic system that is operable by inputs from an operator and is configured to provide at least one rotary output motion to at least one rotatable body portion supported on the tool drive assembly, said surgical tool comprising:

a surgical end effector comprising at least one component portion that is selectively movable between first and second positions relative to at least one other component portion thereof in response to rotary control motions applied to the at least one selectively movable component portion;

an elongate shaft assembly operably coupled to the surgical end effector, the elongate shaft assembly comprising at least one rotary drive shaft that is in operable communication with the at least one selectively movable component portion of the surgical end effector;

a tool mounting portion operably coupled to the elongate shaft assembly, the tool mounting portion being configured to operably interface with the tool drive assembly when coupled thereto, said tool mounting portion comprising:

a driven element rotatably supported on said tool mounting portion and configured for driving engagement with a corresponding one of the at least one rotatable body portions of the tool drive assembly to receive corresponding rotary output motions therefrom; and a drive system, comprising:

a rotary drive gear in driving engagement with the driven element;

a first rotary driven gear in meshing engagement with the rotary drive gear; and

a second rotary driven gear movably mounted to the at least one rotary drive shaft of the elongate shaft assembly for movement into and out of meshing engagement with the first rotary driven gear;

wherein the drive system is in operable engagement with the at least one rotary drive shaft to apply robotically-generated actuation motions thereto to cause said at least one rotary drive shaft to apply at least one said rotary control motion to the at least one selectively movable component portion, and wherein the surgical tool further comprises:

a manually-actuatable reversing system operably interfacing with the elongate shaft assembly to selectively move the second rotary driven gear out of meshing engagement with the first rotary driven gear and apply manually-generated, rotary control motions to the second rotary driven gear and said at least one rotary drive shaft.

2. The surgical tool of claim 1 wherein the manually-actuatable reversing system comprises:

a reversing gear in meshing engagement with the second rotary driven gear; and